Outpatient Treatment of Lumbar Disc Sciatica

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Of 47 patients with lumbar disc disease and sciatic radiculopathy (L-5 or S-1), 39 were successfully managed at home and as outpatients in an ambulatory care facility designed for the treatment of arthritis and back pain. When these patients were evaluated one to three years following discharge, they maintained their maximum level of activity and functional improvement noted at discharge. The average total cost per patient including physician's fees, x-rays, laboratory and therapy was approximately equivalent to the day rate for 1½ days in hospital.

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Each year 7 million Americans will join more than 75 million of their fellow Americans who have suffered low back pain and will spend more than $5 billion on tests and treatments for back pain, and 200,000 of them will undergo lumbar disc operations (*Time*, March 17, 1980, pp 30-38). The burden of the cost of medical care to which back pain treatment contributes so greatly has precipitated a major restructuring of the health care "industry," with a particular emphasis on the shift of inpatient to outpatient treatments whenever feasible.[1,2] Whereas most "low-back strains" are satisfactorily treated on an outpatient basis, the management of lumbar disc derangements with sciatic radiculopathy and the attendant risk of paralysis or unrelenting pain have made admission to hospital for two to three weeks of bed rest and conservative treatment the gold standard by which conservative treatments should be judged before intervening surgically.[3-12]

To assess the efficacy of ambulatory care for lumbar disc-related sciatica, we retrospectively evaluated the outcomes in 50 patients. All of these patients were seen at our ambulatory care facility and were followed for a period of at least one to three years after discharge from our center. These patients were chosen at random, the only criterion being the diagnosis of lumbar disc with sciatic radiculopathy in an L-5 or S-1 distribution. Patients were then reevaluated four to seven years after discharge from the center. The treatment program utilized a comprehensive programmatic approach to treat lumbar disc disorders in the center, which was designed specifically for ambulatory care management of arthritis and back pain and related rheumatologic conditions (see Tables 1 and 2).[13,14]

Patients and Methods

We initially selected for study 50 adult patients who met the clinical criteria for lumbar disc derangement with an L-5 or S-1 sciatica and who had been discharged from the center for at least one year. The clinical criteria for sciatic radiculopathy included an objective sensory or motor deficit on clinical examination and a positive straight-leg-raising test. (The criterion for positive straight-leg raising was the production of sciatic pain, numbness or tingling with or without back pain when the extended leg was raised 60 degrees or less from the horizontal.) In all, 46 patients had sensory deficits, of whom 21 had motor deficits as well. Two patients had motor deficits only. In eight patients, electromyographic (EMG) examinations substantiated the clinical evidence for motor deficits. Routine x-ray films of the lumbar spine were done on all patients. Evidence of discogenic spondylosis was noted in most cases, but no evidence of tumor, infection or fracture was found. Electromyography, computed tomographic (CT) scans and myelograms were not considered essential to the clinical diagnosis and were not done routinely.[7,15-17] All patients were evaluated by a structured telephone interview or from chart data at the time of follow-up. The follow-up evaluations were conducted by a physician (J.O.C.) who had not been responsible for the treatment of patients in this study. Three patients were eliminated from the original study group: two because they had had previous laminectomies and one apparently psychotic patient who refused psychological evaluation. Thus, 47 patients remained in the final study group.

Demographics

There were 29 male and 18 female patients, with a mean age of 47.1 years (range 26 to 73 years). One patient had had

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ABBREVIATIONS USED IN TEXT

CT = computed tomography
EMG = electromyogram

a chymopapain nucleolysis but was considered to have a separate episode of radiculopathy and was included in the study. The mean duration of symptoms before our initial evaluation for those requiring an operation was 9.5 months (range 6 weeks to 48 months). The mean duration of symptoms before our initial evaluation in the conservatively managed group was 5.5 months (range 2 days to 18 months). Eight patients had been treated in hospital before our initial evaluation for periods ranging from 1 to 3.5 weeks. Two of the eight patients were in the surgical group and had been previously treated in hospital, one for 1 week and one for 3.5 weeks. The patients were generally above average socioeconomically and, except for one patient who had a Workers' Compensation claim pending, were not involved in litigation. In none of the patients did evidence of cauda equinal compression develop during or after the initial therapeutic regimen.

TABLE 1.—*Diagnostic and Therapeutic Classification for Low Back Pain*

Chronicity
- Acute: 0-4 wk since onset
- Subacute: 4-12 wk since onset
- Chronic: 12 or more wk since onset
- Chronic, recurrent, unstable: Low back pain or sciatica (or both) of greater than 12 wk duration, which has worsened in the past 12 wk.
- Chronic, persistent, stable: Low back pain or sciatica (or both) of greater than 12 wk duration, which has not changed in character during the past 12 wk.

Severity
- Severe: Intense pain in the lumbar area (lumbago) or pain radiating into the leg (sciatica), or both, which is either continuous or provoked by almost any movement affecting the back and requiring narcotics or bed rest or both in a back-protected position for relief. Neurologic deficit (or positive straight-leg-raising test) of suspected or known recent onset with or without significant pain.
- Moderate: Less intense lumbago-sciatic pain usually precipitated by prolonged sitting, standing or sudden unguarded movement and requiring only several h bed rest, local heat or cold, mild analgesics or occasional narcotics for relief. If acute, no neurologic deficit is present. If subacute or chronic, any neurologic deficit is stable or regressing.
- Mild: Low back or sciatic pain or both is tolerable and usually intermittent and achy in character, precipitated by fatiguing or stressful activity such as driving for two or more h, prolonged standing, brisk walking or jogging more than 0.8 km (0.5 mi), carrying a full shopping bag for one or two blocks or typing for one hour. Pain is usually relieved with local heat or cold and short rests or mild analgesics.

Results

Of 47 patients with clinical signs and symptoms of acute to subacute L-5 or S-1 lumbar disc with radiculopathy, 39 were successfully managed in an outpatient treatment program. The patients when initially seen required bed rest or minimal activity for control of symptoms and were classified as phase I (bed rest) or phase II (part-time out of bed) (Tables 1 and 2).[14] At the time of the initial follow-up (one to three years after discharge), 37 of 39 of these patients were all in phase III (engaged in full-time sedentary work and home activity) or phase IV (engaging in vigorous sports) (Table 3).[14] The phases were used as a basis for scoring—that is, phase I = 1 and phase IV = 4. The initial mean score for the 47 cases was 1.4 ± 0.5, and the final score for the 39 patients not requiring a surgical procedure was 3.6 ± 0.7. Two patients made no improvement and refused an operation as well. One patient had a chymopapain nucleolysis and seven patients had laminectomies.

The mean duration of treatment in the 39 nonsurgical cases was 115 ± 76 days. The mean duration of treatment at the center before referral for an operation in the eight patients requiring either chymopapain or an operation was 38 days (with a range of 10 to 145 days). If the one patient with chronic recurrent symptoms who ultimately had a laminectomy is excluded, the time from the first visit to surgical referral averaged 23 days (range 10 to 36 days).

The average cost for total management of the nonsurgical cases at the center, including physicians' fees, physical therapy and occupational therapy, corsets and supplies and

TABLE 2.—*Functional and Therapeutic Classifications of Low Back Pain Syndromes*

Phase	*Activity*	*Definition*	*Exercise*
I	Bed rest 90%, up only for bathroom (and meals if not in pain when seated)	Severe acute, subacute and chronic with unstable recurrence	Simple stretching for pain relief and basic abdominal conditioning done with back protected
II	Up 10% to 90% of waking hours, daily activities modified to minimize back stress	Severe, chronic but stable; moderate acute, subacute chronic, and mild acute	Graduated lumbar, gluteal and thigh stretching with progressive abdominal and hip and knee strengthening to improve mobility and strength to facilitate proper body mechanics
III	Up 100%, normal daily activities without restriction and mild to moderate athletics	Mild subacute and chronic with mild but unstable manifestations	Continue progressive mobilization and strengthening to facilitate endurance and resiliency for normal activities
IV	Engaging in competitive athletics	All above patients in remission and with mild chronic stable disease	Conditioning for vigorous sports

TABLE 3.—*Lumbar Disc With Radiculopathy: 1- to 3-Year Follow-up of 47 Cases**

Treatment Groups	*Initial Status*	*Discharge Status*
Conservative outpatient treatment, successful, N = 39	Moderate to markedly impaired (N = 37)	Normal activity or athletics (N = 37)
Conservative outpatient treatment, failed, N = 10	Moderate to severely impaired (N = 10)	Chymopapain nucleolysis (N = 1); laminectomy (7); refused surgical treatment (2) (AMA)

AMA = against medical advice

*Telephone or chart review.

laboratory and x-ray studies, but exclusive of the occasional EMG or CT scan (typically done only in those patients referred for surgical treatment), was $1,062. The average cost for the eight patients referred for an operation was $633 before the referral. Thus, the total cost for outpatient treatment was less than the prevailing daily bed charges for 1½ days in hospital ($739 per day in California in July 1983; *CMA News,* July 19, 1983).

Nine patients who had been admitted to hospital within six months before beginning treatment at the center required a longer duration of treatment ($P < .009$), but this did not influence the ultimate favorable outcomes in these cases. Factors having no significance to the outcomes of treatment were previous accidents of any kind, severity of initial symptoms, chronicity, sex, the use of braces and corsets or the use of transcutaneous nerve stimulators.

Discussion

The natural history of both low back pain and lumbar disc disease with sciatica promises a favorable outcome without surgical intervention in the vast majority of patients.[3-12,18] This fact coupled with the unimpressive outcomes of an operation in many cases underlies the growing trend toward the conservative management of lumbar disc disorders. The issue becomes more complex once evidence of sciatic nerve compression is found because of the potential for more persistent and more disabling symptomatology to ensue in these cases.[4,8,18] With the exception of early intervention for cauda equina compression or rapidly progressive unilateral leg paresis, the indications for surgical treatment become questionable in all instances of disc-related lumbar radiculopathy.[3-5,11,18] Perhaps the best that can be hoped is a marginally shorter convalescence with no realistic hope that an operation will prevent recurrence or minimize disability.[3,5,12,18]

Granting that conservative treatment of lumbar disc disorders is initially mandatory in almost all cases, one can identify the single most important variable to be considered in the successful conservative treatment of such patients, and that is bed rest.[3-12,18] The standard for adequate conservative treatment before surgical consideration is two weeks of bed rest in hospital with or without pelvic traction.[3-12,18] At the current hospital bed charges of $700-plus per day, exclusive of physicians' fees, therapy and diagnostic studies, even two weeks of hospital care for conservative treatment is extremely costly (*CMA News,* July 19, 1983).[1] This cost becomes enormous when one considers that 200,000 backs are operated on each year and that this represents only 3% of the cases of back pain requiring treatment.[18]

The possibility of managing patients with lumbar disc derangement and sciatica as outpatients becomes increasingly more attractive as methods of instructing patients in strategies for home treatment are refined. This is of particular interest in our series when the lengthy duration of symptoms before our initial evaluation is considered. The mean duration of preceding symptoms in the surgical cases was 9.5 months (range 3 weeks to 48 months) and for the conservatively treated cases was 5.5 months (range 1 week to 18 months). The strategies for home treatment include detailed instruction in bed transfers, chair and car transfers, choice of seating, easily applied and correctly fitted lumbosacral corsets, home cold-pack therapy, providing hospital beds for home and raised toilet seats when necessary, the fitting and instruction in the use of canes in some instances and the use of moderate analgesic medication for only a few days, all of which contribute to successful outcomes. The close follow-up—one to two visits per week—in the first few weeks of treatment, with reassessment and appropriate modifications of therapy, plays a major role in the orchestration of the therapeutic options toward a successful outcome. One of the problems with bed rest as therapy is the failure to instruct patients on how to get in and out of bed safely, and this and other failings in patient education regarding activities and exercise may lead to a higher early failure rate for conservative treatment, even when this is carried out under hospital conditions.

In most of our cases, bed rest with bathroom privileges is required for less than two weeks, with activities (phase II to phase III) gradually resumed over the course of the first month or two (Tables 1 and 2). After the successful achievement of phase III level activities and exercises, further conditioning for more vigorous athletic endeavors is commenced, which may require an additional two to three months of supervised progression of exercise and conditioning for specific sports.

Patient education with good adherence to the treatment program in terms of activity level and exercise conditioning appears to play an important role in the outcome. At the initial follow-up period (one to three years after discharge), 83% of the patients were continuing their exercises. At the time of the four- to seven-year follow-up, these patients were either continuing their discharge exercise program or had substituted another appropriate regimen such as yoga.

In 4 of the 39 patients treated conservatively as outpatients, one to four epidural steroid injections appeared to play an important role in reducing symptoms enough to allow for the successful continuation of conservative outpatient treatment rather than referral for surgical intervention. In four of the seven patients requiring surgical treatment, who had also had epidural steroid injections, there was no response and the surgical referral was made. In one of the four patients initially successfully treated conservatively who had a late recurrence of symptoms (after three years of follow-up), a second course

TABLE 4.—*Lumbar Disc With Radiculopathy: 4- to 7-Year Follow-up of 36/47 Cases**

Conservative Outpatient Treatment Group (31/39 cases)	
Maintained improved status after discharge	7
Further improved status after discharge	20
Occasional mild low backache	5/20
Occasional mild leg ache or paresthesia	4/20
1 severe transient episode of low back pain	2/20
Improved sciatic manifestations but subject to	
Transient episodes of moderate low back pain	1
Chronic low back pain	1
Recurrence of sciatica	2
Treated successfully as outpatient (epidural blocks)	1
Treated with chymopapain—successful 1 yr postinjection	1
Surgically Treated Group (5/7 cases)	
Chymopapain	
Improved with occasional low back pain and leg cramps	1
Laminectomies	4
Pain-free	2
Improved with mild leg and low back pain	2

*Telephone or chart review.

of three epidural steroid injections permitted resuming convalescence and return to a phase III and better activity level, such as playing regular singles tennis.

Symptoms associated with a poor prognosis and the institution of epidural blocks or surgical intervention were refractory pain either at rest or with limited activity (such as a sitting or walking tolerance of less than ten minutes) and a persistently positive straight-leg-raising test at less than 45 degrees. Of 8 patients in the surgical group, 4 had both sensory and motor deficits compared with 13/39 cases in the conservatively treated group. The extent of the initial sensory and motor deficit did not adversely prejudice the outcome of the conservatively treated cases, but patients with progressing motor deficits would have been excluded from this study.

At the four- to seven-year benchmark, 4 of the 31 patients were either unimproved (one patient had chronic low back pain) or were having recurrent episodes of back pain three to four times yearly (this occurred in one patient who was able to continue his activity level but required a corset and a transcutaneous nerve stimulator for pain control during exacerbations) (Table 4). One patient required a chymopapain nucleolysis and had a year's convalescence after nucleolysis before returning to phase III activities. This recurrence or failure in 4 of the 31 patients available for follow-up at four to seven years represents a 9% poor result and 3% failure rate (the patient requiring chymopapain nucleolysis), or an 88% success rate in those 31 of 39 patients who were available for follow-up. This compares more than favorably with the 80% rate of initial improvement and the 26% recurrence rate after surgical treatment cited in Rish's review of surgical outcomes in lumbar disc disease.[18] The results of this study should also give cause for reconsideration by those who recommend an operation to prevent recurrences of lumbar disc-related problems.

Another aspect of outcome is the ability to return to work and the time it takes to do so. In a large series from Kaiser Permanente, the average duration of convalescence after surgical treatment of lumbar disc disease before return to work was 84.3 days.[5] This was considerably longer than the 17.3 days average return to work time for our patients and was slightly shorter than the 115 ± 76 days required by our patients to reach their maximum level of function before their initial discharge (phase III or phase IV).[14] The differences may reflect social and vocational differences in the patient populations and, more important, may reflect our continued supervision of patients until they have reached their maximum level of athletic capability.

Conclusions

Conservative treatment for lumbar disc disease with sciatica has proved to be feasible in 8% to 28% of patients in several large series.[18] Conservative treatment of lumbar disc with sciatica today has come to mean that two weeks of supervised bed rest in a hospital have been provided to a patient before considering a surgical remedy. In our series, 47 patients with lumbar disc disease and sciatic radiculopathy were successfully treated at home and as outpatients in a specially designed center. Only 15% of these patients required surgical remedies, and 79% of the patients treated conservatively returned to normal or athletic activities. Outpatient management in a properly designed program can be at least as effective in terms of outcome as hospital-based conservative treatment or surgical intervention or both. The economic benefits of outpatient conservative management make it potentially the treatment of choice for most patients with lumbar disc disease and associated sciatic radiculopathy.

REFERENCES

1. Freedman SA: Sounding board megacorporate health care. N Engl J Med 1985; 319:579-582
2. Stern RS, Epstein AM: Institutional responses to prospective payment based on diagnosis related groups. N Engl J Med 1985; 312:621-627
3. Johnson EW, Fletcher FR: Lumbosacral radiculopathy: Review of 100 consecutive cases. Ann Phys Med Rehabil 1981; 62:321-323
4. Bell GR, Rothman RH: The conservative treatment of sciatica. Spine 1984; 9:54-56
5. Blau L, Kent L: Conservative and surgical aspects of disc lesion management. West J Med 1974; 120:353-357
6. Pearce J, Moll JM: Conservative treatment and natural history of acute lumbar disc lesions. J Neurol Neurosurg Psychiatry 1967; 30:13-17
7. Giaccone V, Glatter M: Conservative management of acute low back pain. Orthop Rev 1979; 8:77-80
8. Nachemson AL: The lumbar spine: An orthopedic challenge. Spine 1976; 1:59-71
9. Henderson RS: The treatment of lumbar intervertebral disk protrusion: An assessment of conservative measures. Br Med J 1952; 2:597-598
10. Kahelius A: Prognosis in sciatica. Acta Orthop Scand 1970; 129(Suppl):1-76
11. Wiesel SW, Cuckler JM, Deluen F, et al: Acute low back pain: An objective analysis of conservative therapy. Spine 1980; 5:324-330
12. Weber H: Lumbar disc herniation: A prospective study of prognostic factors including a controlled clinical trial. J Oslo City Hosp 1978; 28:36-61
13. Swezey RL: Arthritis rehabilitation: Staff, facilities and evaluation, *In* Ehrlich G (Ed): Rehabilitation Management of Rheumatic Conditions. Baltimore, Williams & Wilkins, 1980
14. Swezey RL: Low back pain, *In* Fries J, Ehrlich G (Eds): Prognosis—Contemporary Outcomes of Disease. Bowie, Md, Charles Press, 1981, pp 360-364
15. Bell GR, Rothman RH, Booth RE, et al: A study of computer-assisted tomography—II: Comparison of metrizamide myelography and computed tomography in the diagnosis of herniated lumbar disc and spinal stenosis. Spine 1984; 9:552-556
16. Eisen A, Hoirch M: The electrodiagnostic evaluation of spinal root lesions. Spine 1983; 8:98-106
17. Wiesel SW, Tsourmas N, Feffer HL, et al: A study of computer-assisted tomography—I: The incidence of positive CAT scans in an asymptomatic group of patients. Spine 1984; 9:549-551
18. Rish BL: A critique of the surgical management of lumbar disc disease in a private neurosurgical practice. Spine 1984; 9:500-504